UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

UNITED STATES OF AMERICA,	)	
	)	
v.	)	Case No. 11 CR 699
	)	
	)	Hon. Charles R. Norgle, Sr.
	)	
YIHAO BEN PU and SAHIL UPPAL	)	

YIHAO BEN PU'S SUBMISSION IN AID OF SENTENCING AND WITH RESPECT TO SENTENCING FACTORS SET FORTH IN 18 U.S.C. § 3553

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BACKGROUND

Yihao Ben Pu ("Ben") comes before this Court for sentencing for one count of Theft of Trade Secrets pursuant to 18 U.S.C. § 1832(a)(3) and one count of Unlawful Copying of Trade Secrets pursuant to 18 U.S.C. § 1832(a)(2). Specifically, Ben took source code from employer Tradeworx and non-source code (alpha data) from employer Citadel.

The government, the defense and the Probation Office all agree that there was no actual loss in this case. The parties disagree, however, on whether there was intended loss and as to the amount of any loss. The government asserts that Ben intended to cause $2.6 million in loss to Tradeworx because that is the figure that Tradeworx provided for the research and development and overhead costs of developing its source code. The government also alleges that Ben intended to cause $10.1 million in loss to Citadel because that was the cost to Citadel of developing the underlying source code that produced the alpha data that Ben obtained. As will be discussed in detail below, Citadel mistakenly based its valuation on the cost of developing source code for its high frequency trading platform, but Ben did not take, had no access to, and knew he could not decipher Citadel's source code. It is therefore an improper basis for an estimate of intended loss.

The Probation Office agreed with the government's figure of $10.1 million in intended loss to Citadel. Probation disagreed, however, that Tradeworx should have included overhead cost in its loss figure, and concluded that Tradeworx's loss was

$2,192,250 rather than the $2,643,149 figure it advanced and was accepted by the government.[1]

Because Ben had no concrete plan to use either Tradeworx source code or Citadel alpha data to the detriment of Tradeworx or Citadel, the defense believes that intended loss to Tradeworx and Citadel is zero. In addition, with respect to the $10.1 million in loss advocated by Citadel and the government, it is critical to understand the undisputed fact that Ben did not have the source code on which $10.1 million was spent. What he had was alpha data, numerical values that are generated by the source code, which was itself unknown and unknowable to Ben. The alpha data alone did not have economic value and could not be built into a profitable trading platform.

Moreover, nowhere in the government's version of the offense does it even argue that Ben intended to obtain the alpha source code either directly or indirectly by reverse engineering what he had into the alpha source code. In fact, the only time reverse engineering is even mentioned is in Jonathan Graham's 302 interviews (attached to the government's version as exhibits D, E, and F), where he stated that he believed Ben is smart enough to do it. Given that Ben's intent is the only issue here, it would be error for the intended loss figure to include the development costs of code that no one argues that he intended to obtain, or has presented any evidence that he intended to obtain.

Furthermore, as also confirmed by the expert, there is no evidence that Ben had a plan to use Citadel information to Citadel's detriment. Indeed, Ben, who all parties agree was intelligent and sophisticated with computers, knew that it was actually impossible for him to reverse engineer alpha data into Citadel's source code. The undisputed expert evidence supports this. For all of these reasons, intended loss in this case is zero.

[1] PSR, at ¶ 64.

When the fact that there was no actual or intended loss in this case is properly understood, the advisory guideline calculation aligns much more realistically with the conduct at issue in this case than does the 87-108 month sentence advocated by the government. Ben was a young and immature man who exercised extremely bad judgment by taking property of his employers without their consent. He was manifestly not a fraudster intent on enriching himself at the expense of his employers. Nor was he, as were the defendants in other trade secret cases, an opportunist who stole trade secrets and then made them available to competitors for his own profit.

Even apart from the correctly calculated advisory guidelines, the factors set forth in § 3553(a) weigh in favor of a lenient sentence for Ben. The nature and circumstances of the offense, Ben's history and characteristics of kindness and generosity to others, and the extraordinarily positive impact his computer science classes have had on the community and the children he teaches, all argue powerfully for a non-incarceratory sentence. In addition, the 3553(a) policy concern of avoiding unwarranted sentencing disparities among similarly situated defendants strongly suggests that Ben cannot be sentenced to anything close to the advisory sentencing guidelines argued for by the government without his sentence constituting a severe disparity with those handed down to defendants convicted of similar conduct.

I. Advisory Guideline Computation.

A. There Was No Actual Loss to Either Tradeworx or Citadel.

The government and the defense agree that this was a case with no actual loss to any party.[2] The government argues that Ben should pay restitution for the amounts that Citadel spent on outside lawyers and forensic consultants to protect its corporate interests

[2] Government's September 18, 2014 Version of the Offense ("Gov't Version"), at 31.

and/or to advance its civil lawsuit against Ben for the same conduct that was the subject of the criminal case. The defense disagrees that the expenditures by Citadel were reasonable or that they have been established as necessitated by Ben's offense conduct in this case. However, the defense agrees that the government is correct not to argue that these amounts constitute guideline loss.

B. There Was No Intended Loss to Tradeworx.

Application Note 3(A)(ii) to U.S.S.G. § 2B1.1 provides that intended loss is "the pecuniary harm that was intended to result from the offense." Application Note 3(A)(iii) to U.S.S.G. § 2B1.1 provides that pecuniary harm means "harm that is monetary or that otherwise is readily measurable in money" and does not include "emotional distress, harm to reputation, or other non-economic harm." The standard for guideline loss is whether by his conduct Ben intended for Tradeworx to suffer a monetary loss. Because there is no evidence that Ben made use of the code for himself or for any other party, there has been no proof of any intent to cause this type of loss.

Arriving at the figure of $2,643,149 million in loss advanced by the government or the $2,192,250 of loss accepted in the PSR[3] requires that the government meet its burden of establishing that Ben *intended* that Tradeworx lose the value of its code. *United States v. Manatau*, 647 F.3d 1048 (10th Cir. 2011) ("Unsurprisingly, we hold that . . . to be included in an advisory guidelines calculation the intended loss must have been an *object of the defendant's purpose*.") (emphasis added). "'[I]ntended loss' means a loss the defendant *purposely* sought to inflict. 'Intended loss' does not mean a loss that the defendant merely *knew* would result from his scheme or a loss he might have *possibly and potentially contemplated*. *Id.* at 1050 (emphasis in original). In *Manatau*, although

[3] PSR p. 16 ¶ 63

the government had argued its calculation of intended harm was accurate because it was "both possible and potentially contemplated by the defendant's scheme," *id.* at 1049, the court rejected that argument for numerous reasons, including the plain meaning of U.S.S.G. § 2B1.1(b)(1), the context in which it appears, similar language in other sentencing provisions, background legal norms relating to criminal liability, that the government's alternative reading was untenable, and the court's precedent. *Id.* at 1050-54.

In this case the government has presented zero evidence on this point. Despite having combed through all of Ben's voluminous chat messages, blogs, and computer folders with his private thoughts and musings for approximately three years, the government found nothing. The fact is there simply was no concrete plan to make use of the Tradeworx code, either to establish a trading system or to transfer it to an existing business. Anything to the contrary is pure speculation.

Indeed, the evidence is the opposite. From March 26, 2010, the date that Ben took Tradeworx code, to present date, there is no evidence that he took a single step toward using the code to replicate Tradeworx strategies or to provide that code to anyone. The fact that Ben took another high frequency trading position at Citadel on May 17, 2010 and then did nothing with the Tradeworx code during his entire term of employment at Citadel establishes that he had no intent to use Tradeworx code for any purpose other than his own private study. That he took Tradeworx code was wrong, and he has pled guilty to that misconduct and accepted responsibility for it. However, that does not mean that Ben intended for Tradeworx to suffer any economic detriment based on his conduct.

Without any evidence on this point it is improper to increase his guideline loss range based on Tradeworx's cost of code development.

1. The Declaration of the Defense Expert Witness Supports the Conclusion That Ben Intended No Loss to Tradeworx.

In the defense submission to the Probation Office, and attached to this Memorandum as Exhibit A, is the Declaration of Brett Holleman, an expert in financial and trading technology.[4] Although Ben has no burden to establish that he did not intend to cause loss to Tradeworx, the defense endeavored to have an expert perform an analysis of Ben's computers and the data thereon to evaluate Ben's use of the data stored on his computer hard drives. Referring to his general review of Ben's computer systems, Mr. Holleman noted:

> The picture I obtained . . . was of a young man with a collector's mentality with respect to almost all digital information. By way of examples, his hard drives contained copies of schoolwork from grade school, a powerpoint presentation his mother had prepared for his 18th birthday, and files from every project he ever worked on since grade school. He retained chat logs for years, and dozens to hundreds of papers regarding financial analysis, and a large mass of digital records going back to a young age.[5]

In addition to the documents mentioned by Mr. Holleman, Ben's computers contained other personal information, such as CT scans of his body, detailed medical records, insurance and tax documents, and private correspondence with loved ones. He also stored backups of his family's and his girlfriend's data.

Significantly with respect to the lack of intended loss to Tradeworx, Mr. Holleman found no evidence whatsoever than Ben had done anything with the Tradeworx

[4] While Ben will not be calling any expert witnesses at the hearing, Mr. Holleman will be available at Ben's sentencing hearing to answer any questions that the Court may have regarding these matters.
[5] Declaration of Brett C. Holleman, attached as Exhibit A, at ¶ 21.

code in his custody other than have it without permission.[6] He saw no evidence of any use, any modification, or anything resembling any attempts to use the Tradeworx material for anything. Without some evidence that Ben was going to do something with Tradeworx materials, it is not possible to assume that he intended that Tradeworx suffer economic detriment.

Additional proof of the fact that Ben intended no loss to Tradeworx can be found in the absence of any effort on Ben's part to obtain the hardware that would be required to profitably trade using the information. As Michael Beller of Tradeworx explained to the government, the physical proximity of trading orders to the exchange on which the orders were to be placed was critical in its business. Beller told the government:

> [H]aving rack space physically located near computers for the financial exchanges, allowed trading orders to be sent and executed very quickly . . . . The closer the Tradeworx server was to the financial exchange's server, the faster a trade could be executed.[7]

This fact is critical, as further underlined by Mr. Holleman's declaration. Holleman's exhaustive review of Ben's hard drives revealed no evidence that Ben made any attempt to construct any part of the physical mechanism that would have been necessary—and that Ben perfectly understood would be necessary—to profitably trade on Tradeworx information.[8] Thus, not only has the government failed completely to meet its burden of establishing that Ben intended to cause economic harm to Tradeworx, but the only evidence offered on the point (provided by the defense expert witness based on his review of Ben's computers) establishes the opposite: Ben had no intention to do *anything*

[6] *Id.* at ¶¶ 17-20.
[7] May 3, 2012 FBI 302 Report of Interview of Michael Beller, attached to Gov't Version as Exhibit A, at 3.
[8] Ex. A at ¶¶ 17-20.

with the Tradeworx materials in his possession, much less use the information to Tradeworx's detriment.

Indeed, Tradeworx has continued to profitably use, and presumably still uses, the very same material without any interruption. Ben's merely having custody of the material has not financially harmed Tradeworx in any way, and there is nothing to suggest he had any concrete plan or purpose to do so.

2. The "At Risk" Line of Loss Cases Relied On By the Government Does Not Establish Intended Loss in This Case.

The government's citation to *United States v. Lauer,* 148 F.3d 766, 768 (7th Cir. 1998) in its argument to impose intended loss for the Tradeworx conduct[9] is entirely unavailing. *Lauer* stands for the principle that defendants are not able to take concrete harmful steps to place the money or assets of their victims in direct jeopardy and then try to avoid the consequences of their actions by claiming that they hoped or expected that some miracle would deliver the victim from harm. As is clear from a survey of the "at risk" line of loss cases, these cases share in common the fact that the defendants, by their concrete, irrefutable *actions* (and not their words or someday plans) have created a situation in which their victims stand to lose their money or assets. *See e.g., United States v. Swanson,* 483 F.3d 509 (7th Cir. 2007) (Defendant CEO who misrepresented the cost of an acquisition to his company board by $4 million and placed that money in a separate account over which he had control, placed that $4 million at risk such that loss could include that amount); *United States v. Bonanno,* 146 F.3d 502, 509 (7th Cir. 1998) (Defendant found to have placed $622,140 at risk when he sold policies to victims requiring them to pay this amount to him); *United States v. Strozier,* 981 F.2d 281, 283

[9] Gov't Version, at 31-32.

(7th Cir. 1992) (Defendant placed $405,000 at risk when he deposited $405,000 in a bank account, even though he had only withdrawn $36,000 by the time the fraud was discovered.); *United States v. Yusufu,* 63 F.3d 505, 513 (7th Cir. 1995) (Defendant placed $90,000 at risk for guidelines purposes when he deposited $90,000 in altered money orders and cashiers checks in an account, even though he had only withdrawn $5,000 by the time the fraud was discovered.).

In none of these cases were the defendants found responsible for guidelines loss based solely on chats, emails, or notes containing their private thoughts. Rather, these defendants (as well as those discussed below regarding sentences imposed in similar cases) were in the midst of taking direct, unmistakable action to steal the victim's money. There are no such facts in this case.

C. There Was No Intended Loss to Citadel.

As with the Tradeworx offense conduct, to establish that Ben intended to cause $10.1 million in monetary cost to Citadel, the government must meet its burden of establishing that Ben intended to cause pecuniary harm to Citadel through the use of its code. The government has not made that showing.

First, as further detailed below, although the government asserts that Ben "made clear his desire to leave the company" within 7 weeks of starting his employment there,[10] all of the evidence points to exactly the opposite conclusion. Second, the evidence the government provides in support of Ben's supposed "master plan" is presented without any context. When properly examined, though, it is far from convincing.

For example, the government makes much of the fact that the "subjects of [Ben and Uppal's] G-chats were unnecessary for their Citadel work." But that proves nothing.

[10] *Id.* at 15.

It is not at all surprising that two brilliant young friends who were passionate about their work would discuss that subject from time to time. Of particular note is a July 22, 2011 conversation (merely one month before Ben's employment at Citadel was terminated) that was quoted by the government in its version of the offense. On that date they were discussing the idea of testing the thesis of a recent academic paper, as is abundantly clear from the first two lines of the government's own excerpt:

> PU I like the paper
>
> PU We should test it
>
> UPPAL It's somewhere between the obvious shit that doesn't work and the highly theoretical technical stuff that I want to try
>
> PU Yeah
>
> PU It looks like the guy uses daily data and no trading costs?
>
> UPPAL Nah, but remember we're not uber concerned with costs to begin with, we're just looking for predictive components[11]

This conversation shows Ben and Uppal were replicating *daily* (not mid or high frequency) trading strategy, and doing so to duplicate an academic paper they had both read, a typical form of academic and scientific study.

But the government points to even more tenuous evidence in its effort to argue for multimillion dollar intended harm. The government asserts that "[Ben] created two 'virtual machines' on his Citadel work computer. These virtual machines allowed [Ben] to access computer ports that Citadel previously disabled and further allowed [Ben] to gain authorization access to Citadel's computer system."[12] However, Ben did not create these "virtual machines on his Citadel computer." Citadel did. And while the government

[11] *Id.* at 18.
[12] PSR, at ¶ 34.

also points to "'VNC,' which was a tool [Ben] later used to extract confidential business information from Citadel [sic],"[13] VNC was a required program at Tradeworx and is a basic tool for remote access to computers. The fact that Ben used it and discussed it with Uppal while both were employed there does not establish an intent to harm Tradeworx.

Despite the government's best efforts to suggest otherwise, Ben and Sonny were not conspiring to bring about the downfall of Citadel and Tradeworx, or to compete with them, or in fact to do anything other than satisfy youthful intellectual curiosity. Their passion for programming and inquisitive natures were exactly why Citadel and Tradeworx employed them to begin with. Making assumptions about nefarious intent to do harm beyond the possession of the materials based only on their interest in trading strategies simply does not follow.

Additionally, Citadel's argument that Ben wanted to cause it $10.1 million of loss is based on a false premise—that what he took was the thing that Citadel spent $10.1 million creating. That is absolutely false, and the government has never claimed to have evidence to the contrary. What Ben took was the numerical outputs that emerged from the Citadel source code.[14] That data was not valuable.[15] Although Ben was also sent three pieces of source code from Sonny, those files were written by Sonny and did not consist of any of the trading algorithms of Citadel.[16] They were also of very little monetary value,[17] and the government has never argued or offered any proof otherwise. Third, even if Ben could have reverse engineered the output data into Citadel's source code (which he absolutely could not have done), as was the case with Tradeworx's code, he and everyone

[13] *Id.* at ¶ 23.
[14] Ex. A at ¶ 13.
[15] *Id.* at ¶ 14.
[16] *Id.* at ¶ 15.
[17] *Id.* at ¶ 16.

in the business knew that he could never trade profitably without the physical infrastructure, which he did not have and made no attempt to develop.[18] For all of these reasons, the government's calculation of intended harm to Citadel should be rejected.

1. Ben Did Not Intend to Leave Citadel.

Much of the government's argument with respect to intended loss from the Citadel offense conduct is based on the notion that Ben was actively trying to leave Citadel. This "desire" to leave was, according to the government, formed within 7 weeks of starting work at Citadel. The government is just plain wrong on this point. And all of the evidence in its possession makes this clear. For example, attached hereto as Exhibits B through G are documents, including emails to and from Ben between May and July 2011, which all demonstrate his intention to not only stay at Citadel, but to work through its ranks to take on more interesting projects and responsibility.

Despite having access to all of Ben's data from a period spanning several years, the best the government can do to set forth Ben's "plan" is a vague reference to a calendar entry on his cellphone.[19] The government's offering of Ben's note to himself in his phone to "leave Citadel" on July 8, 2010 is nothing more than a snapshot of Ben's thinking at a certain hour on a certain day, if that. By contrast, on July 20, 2010, just twelve days later, Ben informed Maya Shved, the recruiter who placed him at Citadel (and thus the best possible person to help him move if he so desired) that he just wanted her to know that "things are going very well in Chicago. I'm really enjoying Citadel so far!" Given these later statements, the far more likely reason such a note entry was in his calendar was to remind him to physically leave Citadel at that time on that day, not leave

[18] *Id.* at ¶ 8.
[19] Gov't Version, at 15.

his employment. Moreover, Ben was 23 years old in 2010. He was technologically very skilled, but still very immature. That his ambitions and ideas were all over the map and shifted day to day makes him a typical 23-year-old. Even assuming the government's reading of the note is accurate, citing a few examples of thoughts to leave Citadel (in some uncertain time frame) is a far cry from establishing a grand plan on his part to damage Citadel by taking its code.

Further, as shown in the attached Exhibits, Ben continued to tell Shved and others that he was not interested in leaving Citadel. For example, on May 9, 2011, almost a full year after the government contends Ben supposedly "made clear his desire to leave," Ben wrote to Shved, "unless there's a dramatically better opportunity, I'll probably stick out here for about another year before getting anxious. Would appreciate insight if possible. Would love to know what I should be planning for."[20] A week later, on May 16, 2011, Ben wrote to Shved again and clarified, "I'm already building a business here at Citadel, so really I want a place where I have a higher chance of better success, not just a horizontal move for location + little comp."[21] On May 19, 2011, Ben told Daniel Morrison, a consultant with a different recruiting firm, "things are going well here at Citadel, so I don't want to dive into chats that may evolve into interviews right now."[22] During the following month while corresponding with a separate and totally unrelated individual, Ben once again wrote, "I'm interested in hearing more about these places . . . , but things are going really well at Citadel so I don't think now is the best time for me to leave."[23] And even earlier that same day (June 15, 2011), Ben told Laura Peterson, yet

[20] May 9, 2011 E-Mail from Ben Pu to Maya Shved, attached as Exhibit B at 2.
[21] May 16, 2011 E-Mail from Ben Pu to Maya Shved, attached as Exhibit C at 2.
[22] May 19, 2011 E-Mail from Ben Pu to Daniel Morrison, attached as Exhibit D.
[23] June 15, 2011 E-Mail from Ben Pu to Matthew Hoyle, attached as Exhibit E.

another recruiter, "I have currently developed a profitable strategy at Citadel, and additionally I have a lot of growing responsibility in the group. So, I'm not sure if now is the best time to move."[24] These emails make clear Ben's desire for interesting work and more responsibility; not his desire to leave.

Recruiter, Maya Shved, who was deposed in Ben's civil lawsuit with Citadel, testified that throughout her association with Ben it was she and not he who raised the prospect of his changing jobs, that Ben never once while working at Citadel told her he was unhappy and wanted to leave, and that Ben did not send her his resume.[25]

Although the government assumes that any discussion Ben had with Sonny about trading systems was evidence of an intention to leave Citadel, the fact of the matter is that working on trading systems was a way that Ben could improve his value to Citadel and his own professional future. For example, in a May 9, 2010 email to Maya Shved, Ben explained the manner in which some of his own independent work and experiments (using the Citadel alpha data and term data) were valuable to his professional development. Ben wrote:

> Citadel is not bad. I am wondering, however, whether there will be an opportunity for me to participate in building a new business as well. I am maintaining a few books here and tools and such. Also I'm still building out their passive fx business, but I'm more or less doing that entirely on my own, from order routing and management all the way up through strategy code and analytics. This, I have a lot of work, and the risk is a bit high since there are not really any other stakeholders. I'd prefer to be in a team that had more senior people, but most of them got tasked by KG [Ken Griffin of Citadel] to build a new equities business (which is doing very well).[26]

[24] June 15, 2011 E-Mail from Ben Pu to Laura Peterson, attached as Exhibit F.
[25] Excerpts from Deposition of Maya Shved, attached as Exhibit G, pp. 218-220.
[26] Ex. B at 2.

Ben accurately understood that the type of work he and Sonny were doing, although not specifically assigned to him by Citadel, was going to help him grow his skill set to be a better employee and a more valuable professional. That he was interested in and experimenting with this information makes him ambitious. It does not, as the government contends, establish that his intention was to leave Citadel and use its code to bring about pecuniary harm to Citadel.

As demonstrated by Ben's and others' statements from the period, although Ben was young and curious and interested in diverse areas, he had formulated no intention to leave Citadel. Thus the government has not met its burden of establishing that Ben intended to use Citadel proprietary information to cause Citadel economic harm.

2. The Material Ben Took from Citadel Was Not Source Code and Did Not Cost Citadel $10.1 Million to Develop, and the Government Has Not Argued that He Intended to Reverse Engineer It to Obtain the Source Code.

The crux of the government's argument of loss to Citadel depends upon the Affidavit of Jonathan Graham, which was attached as Exhibit J to the Government Version ("Graham Decl"). While the declaration is confusing because of its multiple uses of the term "alpha," the document actually establishes that what Ben took from Citadel was not worth $10.1 million. Graham reviewed Files 3, 4, 5, and 6, which were the files that Ben was charged with taking from Citadel. Graham admits that all that was in these files was "alpha data" and "alpha term data."[27] According to Graham, both alpha data and alpha term data consist of numerical outputs that are generated using alpha algorithms.[28] According to Graham, these underlying alpha algorithms and the

[27] Graham Decl. at ¶ 12.
[28] *Id.* ¶¶ 9-10.

component alpha terms "are developed and created by Citadel employees and constitute some of the most valuable proprietary information Citadel possesses."[29]

What is absolutely critical to understand in order to evaluate the merit of the government's loss argument in this case, and what is not in dispute between the parties, is that *Ben did not have any of Citadel's alpha algorithms. Nor did he have the component alpha terms.* In other words, what Ben took from Citadel was not the top secret valuable proprietary information that Citadel values at $10.1 million. Rather, what Ben had were a series of numerical values *generated* by the alpha algorithms and component alpha terms to which he did not have access. Most notably, Tradeworx did not even include outputs such as these in its calculation of the alleged intended damages. It conceded, as Citadel should, that in order to be "commercially valuable," the software under valuation was required to have these characteristics:

a. The software had to be in source code form, not executable file form – the types of software employed by Tradeworx require routine updates and modification, and therefore a static executable was deemed not to be "commercially valuable" for purposes of this analysis; and

b. The source code had to at least somewhat functional or usable outside of the Tradeworx systems, either in conjunction with other code taken from Tradeworx or with third-party software -- for example, code that was taken that serves a specific purpose unique to the Tradeworx systems, and that cannot function without interfacing with a material amount of other components that were not taken, would not be included as "commercially valuable."[30]

Although Citadel acknowledges that this information is a "snapshot in time,"[31] it still argues that these numerical snapshots were valuable. However, the best it can muster in support is that strategies and alpha algorithms "that the alpha data and alpha term data

[29] *Id.* ¶ 11.
[30] Beller Declaration, attached to Gov't Version as Exhibit K, at ¶ 2.
[31] Graham Decl. at ¶ 14.

underpinned" are valuable to Citadel.[32] No one disputes that the alpha algorithms and strategies are valuable to Citadel. But that is not relevant here because no one – not the government and not Citadel – is claiming that Ben took those things. Ben took numerical snapshots in time. While these things are related to Citadel's valuable proprietary strategies, the data is not the same or even close to the same as the strategies, as demonstrated by Tradeworx's analysis above. Indeed, beyond the time at which they are generated, they have no commercial value at all. Thus while the $10.1 million figure provided by Citadel might correctly encapsulate the cost of the alpha algorithms and strategies, it is not the cost of what Ben took from Citadel in files 3, 4, 5, and 6, which is the only relevant inquiry to the determination of intended loss.

The Probation Officer seemed to understand this distinction, in part, as evidenced by her questioning of the government as to why Citadel's alpha terms were purportedly worth four times as much as Tradeworx source code.[33] The answers provided to Probation were incorrect and evidence the same misunderstanding of what Ben actually took from Citadel that have led to the incorrectly posited $10.1 million figure. The government informed Probation that one can "put alphas into a trading platform" as evidenced by Ben's trading in his Interactive Brokerage account. In the first instance it is incorrect that alpha data or alpha term data (the materials Ben took from Citadel) can constitute a trading platform. The fact that Ben lost approximately $40,000 trading in his Interactive Brokerage account even with access to this data aptly underscores this fact. In addition, the government's assertion that "certain alphas [Ben] stole are still in use by Citadel today" is absolutely false. The numerical values that Ben took in the form of

[32] *Id.*
[33] PSR, at ¶ 53.

alpha data and alpha term data are of no use whatsoever to Citadel and are not "in use" by Citadel today. What the government is referring to as being in continual use by Citadel is the underlying alpha algorithms and strategies that give rise to the alpha data and alpha term data. Yet it is an undisputed fact in this case that Ben did not have, did not take Citadel alpha algorithms and strategies, and made no efforts to determine them from what he did have. In point of fact, none of the alpha information Ben took from Citadel is still in use by Citadel today. It is only by confusing the valuable strategies Ben did not take from Citadel with the numerical value snapshots that he actually took that such a misinterpretation of the facts is possible.

It is likewise unavailing for the government to simply assume, without factual or evidentiary support, that Ben could have converted his alpha data and alpha term data into anything like a trading strategy. As explained in Mr. Holleman's declaration, Ben did not have the core material relating to the trading algorithms of Citadel, and did not have the ability to reverse engineer that from the material he did have.[34] In addition, while the files were used to implement trades for Citadel, the value of those files decays remarkably quickly, and they do not have any long-term value.[35] Critically, Mr. Holleman's analysis revealed that Ben did not appear to have made any efforts whatsoever, nor was it even possible, to reverse engineer the valuable material starting with what he had.[36] Specifically, after an exhaustive review of Ben's computer files Holleman "saw none of the 'footprints' [he] would expect to see if [Ben] were actually attempting to reverse engineer the files."[37] Holleman "saw no detailed mathematical

[34] Ex. A at ¶¶ 13-14.
[35] *Id.* at ¶ 14.
[36] *Id.*
[37] *Id.* at ¶ 14.

analysis of outputs, no regression analysis, no statistical analysis of any kind" all of which would have been "necessary to have even the vaguest idea of what the alpha code itself was doing."[38] While Ben has no burden to establish anything about his intent regarding the information he took from Citadel, he has offered expert analysis that: (1) he could not have figured out Citadel's valuable alpha algorithms and strategies from the information he had; and (2) his files show zero evidence of any effort to figure out Citadel's valuable alpha algorithms and strategies. Moreover, as explained above, the government has not even argued that he intended to do it. With this evidence it is impossible to hold Ben responsible for $10.1 million of intended loss. The $10.1 million represents alpha algorithms and strategies that no one contends Ben had or intended to obtain. It would be error to allow that figure to drive Ben's punishment in this case.

The little Citadel code that Ben was sent from Sonny was of little value.[39] Although the government argues that "[t]he 'r_gmav.c' file contained computer source code useful in optimizing Citadel's trading strategies," that does not make it proprietary. It is simply a geometric moving average. Basic addition and multiplication are similarly "useful" in this area. That code was nothing like the key programs used in deciding whether or not to make trades, and was all basic building blocks of the type that could have been found in the toolbox of any reasonably skilled financial programmer. At best they were tools prepared by Sonny as an "extraordinarily small" part of his duties.[40] Indeed, in Uppal's submission to Probation, he estimated that he spent no more than 1 percent of his time in one year to create the files found on Ben's hard drives and that

[38] *Id.*
[39] *Id.* at ¶¶ 15-16.
[40] *Id.* at ¶ 16.

there are versions of this back testing methodology available on the internet.[41] Using Citadel's own methodology, this would place their value at something less than $2,052.94.[42]

3. Even If Ben Could Reverse Engineer the Output Data (Which He Could Not), He Could Not Have Traded At a Profit Without the Physical Infrastructure.

As was the case with Tradeworx, Citadel's technological infrastructure and proximity to the exchange are absolutely necessary to make high frequency trading profitable. As explained by Mr. Holleman, high frequency trading firms pay significant sums of money for their co-location at the exchanges on which they trade and for their sophisticated computer hardware.[43] As a highly skilled quantitative analyst, Ben knew that fact. The government has never suggested, much less brought forth any proof, that despite this knowledge, Ben took any steps toward putting together these indispensible attributes. Indeed, based on his review of Ben's computer files, Holleman concluded; "In my review of the computer hardware seized by the government I saw none of the hardware which would be necessary to operate a high frequency trading system, nor did I see any investigation by Ben of the hardware that would be necessary to use if he decided to do so."[44] These facts demonstrate that Ben could not have and had no intention to harm Citadel. As Mr. Holleman explained: "Without a minimum of commercial grade routing and co-location equipment (equipment used to provide computers at the exchange, and directly connected to it), whatever information Ben would have been able to use . . . from the Citadel material would have been useless, and certainly would not

[41] Uppal Probation Submission, at 10.
[42] *See* Graham Decl. at ¶ 25 ("In total, Citadel paid Uppal $205,294 [during his employment].").
[43] Ex. A at ¶ 8.
[44] *Id.*

have been able to cause financial harm to Citadel or Tradeworx, whose infrastructures were already in place."[45] This is flatly inconsistent with the government's allegation of some "master plan" by Ben to trade on Citadel's source code and thereby do it pecuniary harm.

II. The Factors Set Forth in 18 U.S.C § 3553(a) Establish That a Sentence of Probation With a Term of Home Confinement Is a Just and Appropriate Sentence in the Unique Circumstances of This Case.

Title 18 U.S.C. §3553(a) provides the framework for the imposition of federal sentences. *See Gall v. United States*, 552 U.S. 38 (2007); *United States v. Booker,* 543 U.S. 220 (2005). The statutory factors set forth in 18 U.S.C. § 3553(a) are intended to assist the Court in arriving at a just sentence, "sufficient but not greater than necessary" to achieve the purposes of sentencing.

The law that has developed since *Booker* makes clear that the Guidelines are only advisory and are not the only consideration at sentencing. *Gall*, 552 U.S. at 49. Rather, the Guidelines provide a starting point that Courts must consider. Courts should not, however, presume that the Guideline range is reasonable and need not find "extraordinary circumstances to justify a sentence outside the Guideline range." *Id*. at 47. In the place of a mechanical application of the guidelines, Courts are to conduct an individual assessment of each case based on the applicability of the factors set forth in § 3553(a), which correspond to the purposes of sentencing. In its most recent statement on the topic of the proper consideration to be given to §3553(a) factors, the Supreme Court, in *Pepper v. United States*, reaffirmed the principle that the sentencing courts are to give due consideration to the individual being sentenced. 131 S. Ct. 1229, 1235 (2011) ("Highly relevant if not essential to the selection of an appropriate sentence is the possession of the

[45] *Id.*

fullest information possible concerning the defendant's life and characteristics."); *see also United States v. Robertson*, 662 F.3d 871 (7th Cir. 2011).

In this case, a thorough consideration of the § 3553(a) factors yields the conclusion that a sentence of probation with a term of home confinement would be the just result. First, the nature and circumstances of the offense are that Ben made a poor, immature misjudgment about the seriousness of accessing employers' proprietary information. There is no evidence that he wanted to or could have harmed his employers and certainly no information that he was even close to using the proprietary information to his employers' detriment. Second, Ben's history and characteristics are those of an extraordinarily kind, generous, caring young man who is deeply committed to his family and his community. Third, Ben's actions since the advent of this case – leaving the world of finance to teach computer science to young people in his community – demonstrates a true commitment to using his time and talents for the good of those around him. Finally, the moderate sentences handed down to defendants who have been convicted of much more serious misconduct than that which was involved in Ben's case establish that the punishment sought by the government is entirely out of proportion to what judges in other jurisdictions have found to be just and reasonable.

A. Nature and Circumstances of the Offense: 18 U.S.C. § 3553(a)(1).

Separate and apart from the facts set forth in Section I above for purposes of establishing zero intended loss in this case, the nature and circumstances of the offense present powerful argument in mitigation of Ben's sentence as 3553(a) factors. First, it is significant that all parties agree that neither Tradeworx nor Citadel suffered any actual loss in this case. There was no security breach (other than Ben's unauthorized

possession) of either Tradeworx code or Citadel code (which Ben did not take and never had in the first place). By all accounts, neither entity lost their business or even a cent of business income based on Ben's actions.

Second, the circumstances of both the Tradeworx and the Citadel conduct were that Ben, who was by all accounts a tremendous collector of electronic data, took data that he did not use for other than his own edification and experimentation. Ben's taking of the information was unquestionably wrongful, which was why he pled guilty and accepted his misconduct. But it has not been established to have been part of any plan on Ben's part to give the data to a competitor or to use the information to compete with Tradeworx or Citadel. Ben was an ambitious but immature young man who enjoyed contemplating the dream of one day figuring out a low frequency[46] or high frequency trading platform. Significantly, if the idea was to build a low frequency platform, Ben by definition would not have been using Citadel or Tradeworx code because neither ran a low frequency platform. Ben did not take concrete steps to actually build any platform, such that any possible damage to Citadel or Tradeworx from his musings with Uppal was so remote as to be inconsequential as well as practically impossible.

Third, at the time of the offense conduct, Ben was a 23- or 24-year-old recent college graduate. Unlike defendants in other trade secrets cases who had developed the experience and sophistication to know how to damage their employers and to benefit themselves, Ben was a novice in finance and business whose principal aim in taking the data was to learn and understand more about his job and profession. As was explained in the letter of a high school friend of Ben's, "He picked at things, opened them up, and

[46] *See e.g.*, January 7, 2010 instant message service exchange between Ben and Uppal at Gov't Version p. 7, February 9, 2010 Ben/Uppal communication at Gov't Version p. 8, February 12, 2010 message between Ben and Uppal at Gov't Version p. 9.

often broke them (accidentally) to understand how they worked."[47] As explained in the letter of Ben's mother and father, Hansong Pu and Suyue Wang, Ben was fascinated at an early age with reading and rereading *A Brief History of Time* by Steven Hawking and by questioning their PhD friends on Einstein's theory of relativity.[48] Ben's history of curiosity as to the underlying workings of things is strong support for the assertion that his intentions with the data on his hard drives was the desire to figure out how things work, rather than the intention to cause anyone damage.

Fourth, since the advent of this case, Ben has left the realm of finance. He has taken his considerable computer science skills and has chosen to apply them in the field of providing badly needed computer courses to young people near his hometown of Lexington, Massachusetts. The significant shift in Ben's professional and future plans underscores the fact that his curiosity, his talents, and his need for deconstructing and reconstructing things to understand how they work will be applied to the benefit of his community.

B. History and Characteristics of the Defendant: 18 U.S.C. § 3553(a)(1).

1. Ben Has Consistently Demonstrated Kindness and the Desire to Help Other People.

In his short, 27 years of life to date, Ben has consistently exhibited a profound sensitivity to the needs of others and enormous kindness and generosity. One family friend explained that Ben has served as an excellent example of a son and brother in the Chinese community.[49] He is a caring son and grandson to his parents and grandmother.[50]

[47] Letter of Daniel Suo p. 1.
[48] Letter of Hansong Pu and Suyue Wang p. 2
[49] Letter of Hua Hai p. 1.
[50] Letter of Melanie Lin p. 1.

Individuals in the community observed that Ben raised his little sister as would a father.[51] He has comforted his sister though her ups and downs at school and has been her "most supportive cheerleader," accompanying her to all of her ballet and violin competitions, celebrating her hard work and achievements.[52]

One close family friend wrote of an observation of Ben at a party with ten family friends when Ben was a first year college student. According to this letter, Ben was taking care of all the uncles and aunts and young children, taking photos, bringing food, and playing the piano on request.[53] Mr. Hai wrote of Ben, "His kind and compassionate manner impressed and touched everyone that night."[54]

Another close friend who had the opportunity to observe Ben at dinners and social outings with families in the community explained, "Ben is always the one to serve as a fair moderator of discussions, the scorer of games, the fixer of problems that come up, and the proposer of solutions."[55]

In taking on such a leadership role with the young people in his community, Ben is not competitive with others but kind – helping when he can and encouraging others to help themselves whenever possible.[56] As attested to in the offer of a long-time family friend, Ben was always willing to help the other children in his school, often sacrificing his weekends to explain subjects that some of his classmates had difficulty understanding.[57] When Ben attended computer camp with the son of a family friend in

[51] Letter of Shanni Chen p. 1.
[52] Letter of Ping Gao and Ling Tong p. 1.
[53] Letter of Hua Hai p. 1.
[54] *Id.*
[55] Letter of Shanni Chen p. 1.
[56] *Id.*
[57] Letter of Ping Gao and Ling Tong p. 1.

middle school, Ben helped his friend through the coursework.[58] When Ben and his family went camping with other family friends, Ben was the one to help set up and to make sure that the younger children were productively engaged in activities.[59] When Ben learned that the members of another family were novices on a family ski trip, Ben spent his entire time coaching them on the beginner hills even at the cost of forfeiting his own vacation.[60]

To many friends and acquaintances who asked Ben for assistance during Ben's high school years, Ben acted as an advisor and a mentor.[61] He never hesitated to help anyone he knew with computer issues whether it was the night before his own final exam or before the deadline of his college application.[62] While he was a self-taught computer genius, Ben never considered his knowledge as his own, but rather gave generously of his time to teach others what he had learned – even using his own computer as a server for his friends in high school to better teach them new technology and programming.[63] During the summer of Ben's sophomore or junior year in high school he even ran a free summer camp at his home for younger children – many of whom went on to choose computer science as their college major.[64] As explained by Melanie Lin of Ben, "Perhaps Ben's best trait is his kindness. He is always attentive to the needs of others and makes people feel good about themselves."[65] Simply put, in a series of instances that have had significant positive effect on families in his community, Ben has prioritized assisting others over his own self-interest. He has done this as a very young man, at a time in life

[58] Letter of Chao Chen and Niu Bai p. 1.
[59] *Id.*
[60] Letter of Ping Gao and Ling Tong p. 1.
[61] Letter of Melanie Lin p. 1.
[62] Letter of Leeyong Wu p. 1.
[63] *Id.*
[64] Letter of Hansong Pu and Suyue Wang p. 2.
[65] *Id.*

when many are more focused on themselves and their own enjoyment. These qualities in Ben should appropriately be considered in mitigation of his sentence.

Ben's college friends confirm that his generous spirit and desire to help others persisted in his college years, even in the competitive environment of an Ivy League University. Gary Tang, who met Ben during his freshman year in college, wrote that he was surprised by Ben's humility and generosity.[66] Tang explained that even when Ben was competing with other students for the same internships, he not only helped the other students with their resumes but spent time preparing them for their interviews. For example, one college friend recalled that Ben helped guide him through the interview process at Google.[67] Another friend related the manner in which Ben encouraged her to pursue a computer science major when she had become disillusioned with her initial choice of major, and then acted as her tutor and her mentor while she got up to speed in the new course of study.[68] Yet another friend recalled that Ben not only helped her to get a job after college, but made himself available to talk her through her various struggles.[69] Tang wrote, "For Ben, it simply means more to help others achieve their own goals than to achieve his personal agenda."[70]

Ben's concern for others extended beyond his peer group. A student who worked with Ben at a consulting business they set up through the hospitality services institute at Cornell related that one of Ben's projects was to build an on-line reservation system for a woman who was trying to start a bed and breakfast business.[71] Not only did Ben set up

[66] Letter of Gary Tang p. 1.
[67] Letter of Alex Tsiatas p. 1.
[68] Letter of Lisa Ji p. 1.
[69] Letter Christine Lai p. 1.
[70] *Id.*
[71] Letter of Naveen Dasa p. 1.

the system for her, but he continued to follow up and to provide technical support as needed. In his fellow consultant's observations, Ben's actions evidenced that he cared deeply, not just about the project, but about the long-term success of the business.[72]

After a catastrophic car accident during Thanksgiving break of his sophomore year in college – one that nearly cost Ben his life – Ben consistently suffered from long-term effects including chronic, debilitating pain and fatigue. As explained in his parents' letter, Ben's health has never been the same after the accident.[73] He suffers from pain so severe that he collapses to the floor and often cannot sleep.[74] During the time he was working at Citadel, Ben often become so exhausted that he could not go to work on Fridays, and then spent Friday and Saturday catching up on work and Sunday too exhausted to get out of bed.[75] Rather than focus on his maladies, Ben always tried to pretend that he was fine so that his parents and his friends would not worry about him.[76]

As was aptly summarized by friend Gary Tang, Ben "is not a person who seeks personal financial gain but rather someone who seeks to better others around him." These personal qualities of Ben's, as consistently revealed during his childhood and young adulthood, should appropriately be taken into account in fashioning an appropriate sentence in this case.

2. Ben Is Currently Teaching Computer Science to Young People in a Manner With an Enormous Positive Effect on His Community.

Since the advent of this case, Ben has, with the assistance of his parents and his sister, started a computer science teaching effort for children from the ages of nine to

[72] *Id.*
[73] Letter of Hansong Pu and Suyue Wang p. 3.
[74] *Id.*
[75] *Id.*
[76] Letter of Mei Zhang p. 1.

high school. The classes fulfill an important need in the community because the computer science classes at the local high school are often over-subscribed such that without Ben's classes, students with an interest in computer science would be turned away.[77] In addition, because Ben has provided on-line education for free for introductory level courses, he has provided a critical no-charge service for courses that would otherwise cost a significant amount of money.[78]

More significant than the offering of the computer science classes, however, has been the extraordinary quality of those classes and of Ben's personal stewardship of his students. In letter after letter, highly educated, achievement-oriented parents extol the virtues of Ben's classes and the enormous impact the classes have had on his students. Parents of one of Ben's students explained that Ben's courses feature an introduction to basic programming followed by a problem set that demands skill, insight, and teamwork.[79] In guiding the students through the coursework, these parents explained, Ben is an "excellent and caring instructor" who "connects well with his students" and earns their respect.[80]

Ben's courses are all built upon the foundation of family values and support. He runs the courses with his mother and sister, which parents find to be inspiring.[81] Ben also coaches his students to present a project to their parents, bringing families together in connection with the course of study,[82] and contacts parents individually to share the progress of their children.[83] Ben also works closely with parents, hosting parent-teacher

[77] Letter of Walter and Sharon Gillett p. 1.
[78] Letter of Scott Huie p. 1.
[79] Letter of Charles Alcock and May Ying Chu p. 1.
[80] *Id.*
[81] *Id.*
[82] Letter of Walter and Sharon Gillett p. 1.
[83] *Id.*

conferences to answer questions and provide feedback.[84] In addition to the course of study he has designed for his classes, and the time he takes to make sure parents are informed and involved, Ben also draws computer science competitions to the attention of his students, which, in a number of cases, has led to the students winning prizes and gaining even more confidence.

One parent wrote that Ben's classes have been "an unqualified success in every aspect," "filling a vital learning gap for many students."[85] Of Ben she writes that he has been "unfailingly reliable and responsive" with a "sharp mind and a kind heart."[86] Another parent attested to the fact that Ben was an "excellent teacher and an inspiring role model" who had a gentle and easy-going style, yet inspired students to work hard and be their best."[87] The same parents explained: "Ben has been an unqualified force for good in our family and in our community."[88] Yet another parent describes Ben as "articulate, knowledgeable and patient" and as a natural teacher who has found his true calling.[89] As to Ben's incredible work ethic, a parent has written, "He often works 12 plus hours a day to balance between teaching various student groups, preparing course material for new lessons, and working on his web site to share his talent and knowledge with a much wider audience."[90]

The letters of the many parents of Ben's students who have written to the Court on Ben's behalf in connection with this case also make it clear that Ben is more than a technically skilled instructor. He is a person who cares about the welfare of his students.

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[84] Letter of Richard Zhang p. 1.
[85] Letter of Tracy Heiback p. 1.
[86] *Id.*
[87] Letter of Bruce Rubenstein and Sylvia Han p. 1.
[88] *Id.*
[89] Letter of Wanjie Cheng p. 1.
[90] Letter of Richard Zhang p. 1.

Parents explained to the Court their observation that Ben cares deeply for his students.[91] When parents are unable to pick their children up from their lessons, it is not uncommon for Ben to offer to provide them with a ride home.[92] Parents wrote to the Court explaining that Ben was not just a great programming teacher, but a great role model who the students very much admire, and who goes above and beyond his role as teacher to advise students about course selection at school and extracurricular activities.[93] Another parent said of Ben that he "takes care of every student," and, according to the reports of numerous students, is not only an excellent computer science mentor, but a "good friend [and] good model" whose "smartness and humor is always encouraging everyone."[94] Hui Lu wrote, "As a parent, when I see Ben is so passionate and dedicated on his teaching and made such positive impacts on those young souls, I feel so lucky to have him around and so relieved that my son is in good hands and towards the right direction."[95] Charles Alcock and May-Ying Chu aptly summarized the feeling expressed by many of the parents who wrote to the Court on Ben's behalf in saying, "This family and our community would be much poorer without Ben."[96]

The events that gave rise to this case took place between March 2010 and August 2011 – a period of approximately 15 months when Ben was fresh out of college and without any significant work or life experience under his belt. Since at least the early summer of 2013 up to the present day – a time frame exceeding that of the offense conduct – Ben has been extraordinarily productively engaged in the endeavor of teaching

[91] Letter of Charles Alcock and May-Ying Chu p. 1-2.
[92] Letter of Yuepeng Wan and Yilim Ma p. 1.
[93] Letter of Xinxia Lai p. 1.
[94] Letter of Zongwei Wang p. 1.
[95] Letter of Hui Lu p. 1.
[96] Letter of Charles Alcock and May-Ying Chu p. 1.

and mentoring students in the area of computer science. In so doing he has left the realm of finance to return to his roots and his passion of teaching and helping other people in the study of computers. The change in Ben's focus has not only been phenomenally good for the young people in his community, as attested to by the numerous letter submitted by the parents of his students. It has also been good for Ben's soul. College friend Gary Tang wrote of Ben, "As he transitions his career into education and teaches young people computer science, I see more happiness in his eyes."[97] Tang continued that Ben had shared with him "the joy of teaching young people something new and how gratifying it is to see that his own personal effort is making a huge difference in many students' lives."[98] Ben's long time girlfriend Shu Li confirmed that to Ben, finance was not as gratifying as teaching and recalled that another interest of Ben's was in the area of helping others – specifically pursuing a business in health and fitness.[99] Having returned home to Massachusetts, Ben is also close to his parents and his sister and grandmother and able to obtain the support he needs to contend with the lasting physical maladies that persist from his car accident during his sophomore year in college. Ben is on a trajectory toward rebuilding his life in a manner that has an extraordinarily positive effect on his community. This fact, as well as the powerful words of the parents whose children he is helping, argues powerfully for a non-incarceratory sentence in this case.

C. Specific and General Deterrence - 18 U.S.C. §3553(a)(2(B) &(C).

Ben is not at risk of reoffending. For one thing he has made a permanent and productive transition out of finance and trading into the area of computer science and programming, where the only code with which he deals is the code he and his students

[97] Letter of Gary Tang p. 1.
[98] *Id.*
[99] Letter of Shu Li p. 1.

are creating. In addition, given the publicity surrounding this case and the high level of infamy it has engendered for Ben in the realm of finance, even if he hoped to again pursue a career in finance (which he does not), it is highly doubful that this would even be possible for him.

Most significant, however, is that Ben has suffered intensely from the fallout of this case, has matured significantly, understands his errors, and would never again put himself in the position that he did in 2010 and 2011. Friends who have observed Ben over the course of the last 2 years confirm that this is the case. Ming Gao wrote that over the last few years she sees "another Ben, a matured one who has learned a hard lesson, a more focused and dedicated one."[100] Dr. Tao Hong similarly has observed that over the last 2 years, Ben has learned a lesson and has been working on restablishing his life. Dr. Hong wrote, "Ben has worked very hard since [the start of this case] to redeem himself from his mistakes." Mei Zhang and Mei Sun explained Ben's mature understanding of the case and his tremendous appreciation of the support and care he has received from his family and friends.[101] They wrote of Ben, "He said he has learned a lot and gained strength from his mistakes. He believes he would never make the same mistake again and wished to have an opportunity to make contribution and give back his dedication to people and communities."[102] Given Ben's highly successful career transition and sincere expressions of remorse to those close to him, there is no reason to believe that Ben would ever again find himself in this position.

In terms of general deterrence, Ben was fired from his job in a very public and humiliating fashion with a great deal of media coverage. He has suffered shame in his

[100] Letter of Ming Guo p. 1.
[101] Letter of Mei Zhang and Mei Sun p. 1.
[102] *Id.*

community and with his network of friends and associates – all of whom have been witness to the tremendous upheaval this case has caused in Ben's life as well as that of his family. Even before the criminal case began, he was attempting to defend himself against Citadel's civil lawsuit and to combat their virtually limitless resources. No one who has had a glancing familiarity with this case would believe for a minute that Ben has not suffered enormously for the conduct that was at issue in this case. That message need not be amplified with a prison sentence that would do further and unnecessary damage to Ben's life.

D. Just Punishment for the Offense - 18 U.S.C. §3553(a)(2(A).

In asking for a non-prison sentence for Ben in this case, the defense in no way seeks to minimize the conduct at issue. Ben understands that he made serious errors of judgment and that Tradeworx and Citadel were within their rights to advocate, as they both have, that Ben be punished for his conduct. It is also accurate, however, that neither Tradeworx or Citadel lost money from the parade of horribles that could have arisen from the potential security breach they have both described to the government. The defense believes that in all of the circumstances of the case, and considering Ben's young age, his kind and generous character and the positive transformation he has made in his life over the last two years, that he should receive a sentence of probation. In the event that the Court deems that sentence too lenient, the defense would ask for probation with a period of home confinement and a term of community service. This would allow Ben to continue to provide meaningful assistance in his community and to continue to rebuild his life, which would be a significant positive effect for him and for his communtiy at no cost to the high frequency trading firms involved in the case or to society.

E. Unwarranted Sentencing Disparities for Defendants Who Have Been Found Guilty of Similar Conduct -- 18 U.S.C. §3553(a)(6).

The Government's submission identifies the Advisory Guidelines range as 87 to 108 months' imprisonment. Yet a comparison of the sentences actually imposed in cases like the present one reveals that that range is vastly higher than an appropriate sentence here.

In *United States v. Nosal,* No. CR-08-0237, 2014 WL 121519 (N.D. Cal. June 13, 2014), the defendant was convicted, after a jury trial, of two counts of violating the Economic Espionage Act, in violation of 18 U.S.C. § 1832(a)(2), one count of conspiracy to violate that statute, as well as three counts of computer fraud in violation of 18 U.S.C. § 1030(a)(4). The Court imposed a sentence of 12 months and a day. Unlike this case, the defendant in *Nosal* actually used the information he stole from his employer to start a rival company, and also assisted others to wrongfully access his former employer's computer systems well after his employment had terminated. Unlike Ben, the defendant did not accept responsibility for his conduct but was sentenced after his convicted at trial. It is simply impossible to reconcile the year-and-a-day sentence for the defendant in *Nosal* to anything like the sentence being advocated by the government in this case.

In *United States v. Agrawal,* 726 F.3d 735 (2d Cir. 2013), the defendant, who had worked in the high frequency trading department of a large financial firm, was convicted of violation of 18 U.S.C. § 1832 based upon his: (i) printing thousands of pages of high frequency trading code and taking it to his home; (ii) entering into an agreement with an existing competitor of his employer's who promised to pay him hundreds of thousands of dollars; and (iii) engaging in numerous meetings with representatives of his expected new employer where the purloined code was discussed and analyzed. In that case, the Court

sentenced Mr. Agrawal well below the Government's recommended range of 63-78 months, imposing a sentence of 36 months. The conduct in *Agrawal* is significantly more serious than that which is involved in Ben's case because Agrawal actually took and used extremely valuable source code and profited thereby. In addition, unlike Ben, Agrawal did not accept responsibility for his conduct but was convicted and sentenced after trial.

In *United States v. Hanjuan Jin,* 733 F.3d 718 (7th Cir. 2013), the defendant was convicted of violating the Economic Espionage Act. The defendant, while employed at Motorola, had protracted leave from the company, and in that time sought employment with a Chinese competitor of Motorola that developed communications devices for China's armed services. The defendant returned to the United States for a short time and then, prior to leaving the United States to go back to China, downloaded thousands of internal Motorola documents, and took them with a one-way ticket to China and $31,000 in cash to the airport, where she was apprehended by federal agents. In connection with the investigation, the defendant repeatedly lied to federal agents. The defendant went to trial, and lost. On these facts, the defendant was sentenced far below her Guidelines sentence – 48 months.

In *United States v. Howley,* 707 F.3d 575 (6th Cir. 2013), two defendants were convicted of stealing trade secrets from a competitor and forwarding them to an existing competitor/client. Both defendants went to trial, and were convicted of violation of 18 U.S.C. § 1832, as well as wire fraud, in violation of 18 U.S.C. § 1343. In that case, each defendant was sentenced to four months of home confinement, 150 hours of community service, and four years probation. The sentence was appealed by the Government and vacated. Upon resentencing the same sentence was imposed.

In *United States v. Shanshan Du and Yu Qin,* 2014 WL 2921702 (6th Cir. June 26, 2014), two defendants were convicted after trial, on multiple counts of theft of trade secrets, wire fraud, and one of the defendants was convicted of obstruction of justice. In that case the defendants had actually formed a competing business, and had taken thousands of proprietary documents from General Motors (the employer of one of the defendants). The defendants also planned a joint venture with an identified Chinese carmaker that was a competitor of General Motors. During the investigation, one of the defendants discarded garbage bags full of shredded documents. On these facts, the Court sentenced one defendant to 36 months' imprisonment, and one to 12 months' imprisonment.

In *United States v. Ward,* No. CR-11-2123-RMP (E.D. Wash. July 31, 2014), the defendant was convicted of theft of trade secrets, in violation of 18 U.S.C. § 1832. In that case, the defendant had stolen trade secrets of his employer, an entity that created unmanned aircraft systems for the United States Navy. The defendant attempted to sell the secrets for $400,000 in cash, and also offered them to entities in Kuwait. The defendant was 49 years old at the time of sentencing. On these facts after trial, the Court sentenced Ward to 3 months' imprisonment (time served) and 3 years' supervised release.

Most recently, in *United States v. Yhang,* 2014 WL 5670816 (9th Cir. Nov. 5, 2014), the defendant was convicted, again after trial, of five counts of theft of trade secrets, in violation of 18 U.S.C. § 1832. In that case, the defendant downloaded a massive number of computer files that were trade secrets of a client of his employer, Marvell. The defendant engaged in this conduct after he had obtained a new job at a

competitor, Broadcom, and he provided certain of the trade secrets to Broadcom. The defendant also provided false information when questioned by the FBI. The court sentenced Yhang to 3 months' incarceration.

In light of these cases, Ben's sentence should not even approach the government's recommended range.

First, in each of these cases there was a concrete transfer, normally in much greater volume, of trade secrets of a much more valuable nature (particularly with respect to Citadel in which all parties agree that Ben did not even take their valuable source code), to an identified and existing competitor. Here, despite the Government's effort to argue otherwise, there was no existing competitor and no solid evidence of a plan to create one. Second, in all of these cases the defendants—at least so far as can be gleaned from the information set forth in the record—were older, and far more experienced and mature at the time of their underlying misconduct. They were not 23-year-old recent graduates who, according to even Tradeworx, would not be accustomed to such a secretive environment. Third, in every case identified above, the defendant went to trial, offering a version of the facts and evidence that a jury rejected and that the Government was obliged to controvert. Here, Ben acknowledged his misconduct, admitted his wrongdoing, and did so well in advance of trial.

The policy concern that there not be unwarranted sentencing disparities among similarly situated defendants dictates that Ben, who is significantly less culpable than were the defendants in the above-listed cases, not be punished more severely, but indeed far less severely than these defendants were punished. The fact that Ben accepted responsibility for his conduct and pled guilty, unlike the defendants in these cases, should

also dictate that the sentence he receives is more lenient than the sentences handed down to these defendants. The Government and this Court have a powerful interest in encouraging timely and true acceptance of responsibility. For Ben to receive a sentence eight times or more greater than the sentences received by the above-listed defendants, who were convicted of more serious misconduct after proceeding to trial, would undermine faith in the justice system and constitute a serious violation of the policies set forth in 18 U.S.C. § 3553(a).

CONCLUSION

Ben made serious mistakes at work at 23 and 24 years old. He has admitted to and accepted his misconduct, and, since the advent of this case, has worked extraordinarily hard to redeem himself and to rebuild his life. He has returned to the passion of his high school and college days of teaching and helping other people, and in so doing has become a mentor and a role model to numerous children in his community. He has expanded upon his strong relationships with his family and has been a positive force in the lives of many individuals. At this point in his life, Ben desires simply to continue to help people and to maintain the upward trajectory of his personal and professional life. He asks for a non-prison sentence so that he might have that chance.

Respectfully submitted,

By: /s/ *William W. Flachsbart*
One of His Attorneys

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Attorneys for Defendant Yihao Ben Pu

CERTIFICATE OF SERVICE

I, William W. Flachsbart, an attorney for Defendant Yihao Ben Pu, hereby certify that on this, the 31st day of December, 2014, I caused the above-described document to be filed on the CM/ECF system of the United States District Court for the Northern District of Illinois, which constitutes service of the same.

/s/ William W. Flachsbart

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Exhibit A

Declaration of Brett C. Holleman

I, Brett C. Holleman, of Charles River Associates, make this Declaration and provide the following information.

1. I am currently self-employed as a consultant on portfolio and risk management of alternative asset portfolios, and I work as an expert witness for cases relating to trading strategies, online trading, and other financial matters.

2. I was retained by Ben Pu, one of the defendants in this case, as an expert to provide analysis and testimony, with a particular focus on issues relating to high frequency trading technology and the materials obtained from Citadel and Tradeworx in this case.

3. I have extensive background in high frequency trading and an understanding of high frequency trading systems, both generally and specifically the kinds of systems on which Ben and Sonny worked while at Citadel and at Tradeworx.

4. My relevant experience includes working as the Managing Director and Fixed Income Portfolio Manager at FX Concepts from November 2009 to September 2011, and most relevantly as the Head of Global Trading at Fortress Investment Group from December 2001 through March 2009, where I was responsible for all trading, including oversight of Fortress's high frequency trading operation. At Fortress I was intimately familiar with the automated interaction of Fortress trading systems with the exchanges. At Kiodex, prior to my employment for Fortress, I worked on systems which were intimately connected to high frequency trading systems. In addition, I am familiar with the effect of high frequency trading operations like Citadel's on markets and on others in the market, and the manner in which those operations become or are not profitable. As a result, I am uniquely qualified to consider the operation and use of both the Tradeworx and Citadel

materials in Ben's possession. A copy of my curriculum vitae is attached as Exhibit 1 to this Declaration.

5. I have been given access to all of the materials obtained by the government, and have had the opportunity to review all of the files and data stored on Ben's computer systems. In particular, I have reviewed the files identified by the government as files 1-9, including the files referred to by Citadel as alpha terms, alpha data, intermediate QR data and the three source code files identified by Citadel, r_bt.c, gridSearch.r and mBuild.r.

6. In this declaration, I provide some background discussion of high frequency trading platforms, along with my review of the materials in Ben's possession, and my analysis of those materials.

High Frequency Trading Platforms

7. High frequency trading is a term that is generally used for very fast-moving trading using sophisticated computer programs and strategies (sometimes called 'algorithms') to execute trades of financial instruments like stocks or commodities, or other derivative financial instruments such as futures or options. High frequency trading can even apply to trading of currencies or any automated markets. High frequency trading usually works at very high speeds, and executes trades or holds positions for very small periods of time, often measured in periods of time shorter than even a single second. Because these trades are automated and must be done very quickly, computer programs are used to implement both the trading and the strategies. I will refer in this declaration to the system of computers and the software executing on those computers as a 'high frequency trading platform.'

8. The backbone of all high frequency trading programs is network

infrastructure and high speed computer hardware. High frequency trading strategies work, when they do, because they beat other orders to market, and anticipate market moves in so doing. High frequency firms pay for the advantage – they pay significant amounts for co-location at the exchanges and for their sophisticated computer hardware. In my review of the computer hardware seized by the government I saw none of the hardware which would be necessary to operate a high frequency trading system, nor did I see any investigation by Ben of the hardware that would be necessary to use if he decided to do so. Without a minimum of commercial grade routing and co-location equipment (equipment used to provide computers at the exchange, and directly connected to it), whatever information Ben would have been able to use from the Tradeworx material or to glean from the Citadel material would have been useless, and certainly would not have been able to be used to cause financial harm to Citadel or Tradeworx, whose infrastructures were already in place. In all of the materials I reviewed I saw no evidence that Ben had the technical expertise to build a high frequency infrastructure, or that he had done any research regarding it. In particular, I did not see in any of the computer hardware high-powered calculational hardware or high-powered communications hardware, nor did I see any of the research necessary to locate appropriate hardware of that type.

9. High frequency trading platforms derive the vast majority of their value from the physical infrastructure of the computers performing the high frequency trading. This physical infrastructure consists of very powerful and speedy computers running highly efficient, optimized software, and located very close to the exchange, or 'co-located' at the exchange. The reason such hardware and location is important is that at the speed with which such trades are executed, even the speed of light becomes a factor. A system which is

located closer to the exchange, or which is running on faster computers, has a distinct advantage in execution and timing over a system which is not. A second factor is the trading algorithms used to both generate the mathematical factors used in making trading decisions, and to execute those trades. While there is a large amount of additional code, much of it is ministerial or well-understood in the industry, and is of little to no marginal value. I contrast what I would call 'quantitative analysis' computer code with execution programs. The quantitative analysis programs are the computer codification of the decision-making process. Execution programs may make this possible, but they are largely operating in the same manner across various platforms and companies. The code which Ben had from Citadel via Sonny was this kind of code.

10. Co-location and physical infrastructure is not just important, but is necessary to the operation of a high frequency platform. The best high frequency trading system in the world, running on slow hardware, or connected to the exchange over a significant distance, will not be able to run competitively with systems which are. Anyone working in trading, particularly programmers with the experience of Ben or Sonny, would have understood this to be the case.

11. I provide this information by way of background, and as part of my conclusion that I saw no evidence that Ben intended to use the materials he had from Tradeworx or Citadel, or did use those materials in a way that was intended to financially harm either Tradeworx or Citadel.

Citadel Source Code and Data Files

12. I have reviewed the data files stored by Ben along with the three source code files transferred to Ben by Sonny. In addition, I have reviewed a large number of other files

stored on Ben's computer systems.

13. The significant majority of Citadel files stored on Ben's computers are of the type of files as Files 3, 4, 5 and 6. These are database files, stored in a compressed format, and are all what are called 'CSV' files. They are not source code, of any kind. They all are files of the type that I understand from his job description that Ben would have had access to as part of his employment at Citadel, and appear to all be related to the particular instruments he was trading. They consist of outputs from Citadel's quantitative analysis computer programs. It appears to be Citadel's and the government's position that the value of these files is the same as the value of the underlying programs used to generate them. But such files simply do not have any value outside of the very small (measured in microseconds) timescales on which these trades are made.

14. Trading models, however sophisticated, consist of three principal pieces. Input data, algorithms, and output data. Input data is usually the latest price data or other publicly available information. The algorithm or set of rules is, in Citadel's terms, an alpha. Citadel's repeated use of the term alpha, while mildly confusing, does not change the reality that none of the code Ben had was alpha code, or algorithms. What he had was strictly output of the type he had regular access to as part of his employment – the output of calculations used to decide whether to make the very fast trades which were part and parcel of the high frequency trading system. What he did have was input data and the outputs from that data. While definitely proprietary to Citadel, these output files have no value after they expire and simply could not have been used, as Citadel seems to suggest, to figure out how Citadel was making trading decisions -- to "reverse engineer" the alphas, in other words. Further, in my review of Ben's files, I saw none of the 'footprints' I would

expect to see were he actually attempting to reverse engineer the files. I saw no detailed mathematical analysis of the outputs, no regression analysis, no statistical analysis of any kind. All of this would be necessary to have even the vaguest idea of what the alpha code itself was doing, and none of this is present in any way.

15. In addition to the database files, Ben had the pieces of Citadel source code identified by the government: r_gmav.c, r_bt.c, gridSearch.r and mBuild.r. I have reviewed these files, and none of these files consisted of any of the trading algorithms of Citadel. Indeed, in each case the file seems to be simply a codification of a well-understood financial concept of the type which would typically ship with the statistical package of most financial analysis packages, or is part of the well-understood part of any financial trading system. Each of these files would be basic workmanlike implementation of well-understood financial principles. Citadel identifies r_gmav, for example, as being "useful in optimizing [Citadel's] trading strategies." While that may be the case, so would any program of a similar type, or any generic mathematical and statistical program, regardless of how well-known or understood.

16. In particular, there are multiple well-understood GMAV algorithms publically available on the internet (r_gmav.c). The code I reviewed added nothing of significance to any of the publically available versions. The underlying idea of a back-tester, like r_bt.c, is also nothing novel or particularly secret. The r_bt.c file appears to be a generic backtest program, not based on any particular trading strategy, alpha, or trading parameters. The gridSearch.r program and the 'glue' connecting them, the mBuild, were just as generic. They did not contain anything other than a computer codification of well-understood methods and mathematical processes. No strategy was included of any kind. These sorts of

files are the machinery used to evaluate or execute trades, but they are in no way the decision-making guts – the real value of software portion of the Citadel system. The market value of these types of files is negligible, and their preparation would have been an extraordinarily small part of Sonny's duties. These pieces of computer code were the type of code one could almost find in a financial textbook, let alone the toolbox of any reasonably skilled financial systems programmer. They simply are not valuable in the amounts claimed by Citadel, nor would they have taken the type of time to develop that Citadel indicates in its declarations.

Tradeworx Source Code

17. I have also reviewed Ben's systems with respect to the trading platform code of Tradeworx (files 1 and 2) which was stored on his system. Unlike the Citadel case, the Tradeworx code is a much more complete set of computer files. By my examination, it appears to be a copy of the workspace available to Ben at the time it was copied. In short, it appears to be the system as it existed at the time that Ben obtained the copy.

18. In my review of the Tradeworx material, I focused on whether or not it appeared that Ben was using the Tradeworx files to build or create a set of strategies or to implement a high frequency trading system in a manner that could harm Tradeworx.

19. As above with respect to Citadel, I found nothing indicating that Ben was intending to create a trading system that could harm Tradeworx. He had not obtained any of the critical computer hardware, and did not appear to have done any research regarding the hardware that would be necessary. Given the number of other files retained by Ben, and his apparent habits with respect to computer files and data, I am confident I would have seen such if it existed. Without such hardware or co-location, it would simply not work.

20. Critically, I also saw nothing relating to any use of the Tradeworx material. All of the time stamps on the files were unchanged, and all lined up with an initial copy or duplication of the files. There were no apparent attempts to compile or otherwise analyze the Tradeworx source code, and no modifications made to any of it. Without the Tradeworx infrastructure or a similar infrastructure, the code while interesting, is of little value. I saw no indication that Ben used any of the Tradeworx code either at Citadel or personally. He appears simply to have stored it and had custody of it.

Ben's Other Files

21. During the course of my examination of the materials obtained by the government from Ben, I had the opportunity to review Ben's hard drives and computer files generally. The picture I obtained from that review was of a young man with a collector's mentality with respect to almost all digital information. By way of examples, his hard drives contained copies of schoolwork from grade school, a powerpoint presentation his mother had prepared for his 18th birthday, and files from every project he ever worked on since grade school. He retained chat logs for years, and dozens to hundreds of papers regarding financial analysis, and a large mass of digital records going back to a young age.

Conclusion

22. It is my conclusion that, though Ben admits that he wrongfully had possession of the files of both Citadel and Tradeworx, I did not find any indication that he intended to do or did anything with those files which could even potentially have caused either Citadel or Tradeworx actual financial harm. He lacked the infrastructural know-how, and did not appear interested in obtaining it. With respect to the Citadel material, I found nothing which indicated that he intended to or attempted to reverse engineer the key

algorithms for trading which could even potentially have been valuable. With respect to Tradeworx, I found no indication that he had done anything with the Tradeworx files other than potentially study them and have custody of them, or intended to do anything with them.

I declare under penalty of perjury that the foregoing is true.

November 18, 2014

Respectfully submitted,

Brett C. Holleman

Exhibit B

Gmail by Google

Ben Pu <yihaobenpu@gmail.com>

new gig

15 messages

Maya Shved <maya@revolutionsearch.co> **Mon, May 9, 2011 at 12:44 PM**
To: ben.pu@comell.edu

Hey Ben,

Wanted to update you on my whereabouts and new contact info.

I have left the Options Group and joined Revolution Search. Revolution is a startup recruiting firm founded by Scott Kornbluth and Matthew Freed. They offered me the opportunity to build out an electronic and quantitative business for Revolution and the job was too sweet to pass up.

What's new with you? How are things at Citadel? Any plans to visit NY in the near future?

Anyway, hope all is well. My new contact info below in signature.

Maya

Maya Shved

Director

Revolution Search

(212) 946-2612 (office)

(917) 536-1239 (cell)

maya@revolutionsearch.co

11 Penn Plaza, Suite 5138

New York, NY 10001

http://www.linkedin.com/in/shved

Ben Pu <ben.pu@cornell.edu> **Mon, May 9, 2011 at 1:01 PM**
To: Maya Shved <maya@revolutionsearch.co>

Hey Maya,

Congratulations! That must be pretty exciting. I assume you're going to busy with hiring and getting back in touch with people. Good luck!

Citadel is not bad. I am wondering, however, whether there will be an opportunity for me to participate in building a new business as well. I am maintaining a few books here and building tools and such. Also, I'm still building out their passive fx business, but I'm more or less doing that entirely on my own, from order routing + management all the way up through strategy code and analytics. Thus I have a lot of work, and the risk is a bit high since there are not really any other stakeholders. I'd prefer to be in a team that had more senior people, but most of them got tasked by KG to build a new equities business (which is doing very well).

Anyway unless there's a dramatically better opportunity, I'll probably stick out here for about another year before getting anxious. Would appreciate insight if possible. Would love to know what I should be planning for.

The other problem with being so busy is I haven't had the time to visit the east coast recently. Hopefully soon though.

Ben

[Quoted text hidden]

Maya Shved <maya@revolutionsearch.co> **Mon, May 9, 2011 at 1:18 PM**
To: Ben Pu <ben.pu@cornell.edu>

Thank you, it's been very exciting.

I'm busy but always have time for you J

I brought my veteran accounts over to Revolution and picked up some new ones. Can you send me your updated document – I took no data from the Options Group and now rebuilding from scratch. Will come back to you with some ideas.

Any plans to visit NYC soon? I will probably fly to Chicago in two or three weeks. We should definitely meet up

From: yihaobenpu@gmail.com [mailto:yihaobenpu@gmail.com] **On Behalf Of** Ben Pu
Sent: Monday, May 09, 2011 2:02 PM
To: Maya Shved
Subject: Re: new gig

[Quoted text hidden]

Ben Pu <ben.pu@cornell.edu> **Mon, May 9, 2011 at 1:19 PM**
To: Maya Shved <maya@revolutionsearch.co>

No NYC in the following month. You will probably get here before I get there. I'll send you a resume sometime today.

Would be great to see you =)

[Quoted text hidden]

Maya Shved <maya@revolutionsearch.co> **Mon, May 9, 2011 at 1:22 PM**
To: Ben Pu <ben.pu@cornell.edu>

Same here. I'll let you know once I get a concrete date for the trip

Are you doing ok? It's clear you're hating the gig, but question is how much?

From: yihaobenpu@gmail.com [mailto:yihaobenpu@gmail.com] **On Behalf Of** Ben Pu

Sent: Monday, May 09, 2011 2:20 PM

[Quoted text hidden]

[Quoted text hidden]

Ben Pu <ben.pu@cornell.edu> **Mon, May 9, 2011 at 1:25 PM**
To: Maya Shved <maya@revolutionsearch.co>

Well it's a huge improvement over tradeworx at least. Mainly I need to move to the east coast where I can start building my network again. Chicago is nice but not the place for that.

Things are definitely "ok" and worth staying for another year. Part of the issue for me is I have very few points of comparison.

[Quoted text hidden]

Ben Pu <ben.pu@cornell.edu> **Mon, May 9, 2011 at 1:27 PM**
To: Maya Shved <maya@revolutionsearch.co>

Do you need me to start forwarding some of the people I had previously put you in touch with?

[Quoted text hidden]

Maya Shved <maya@revolutionsearch.co> **Mon, May 9, 2011 at 1:35 PM**
To: Ben Pu <ben.pu@cornell.edu>

That would be awesome

- Ill bring you back to the east coast. You know my main apprehension – I want to make sure your resume is rock solid and something we can leverage and build from for the future

From: yihaobenpu@gmail.com [mailto:yihaobenpu@gmail.com] **On Behalf Of** Ben Pu
Sent: Monday, May 09, 2011 2:28 PM

[Quoted text hidden]

[Quoted text hidden]

Ben Pu <ben.pu@cornell.edu> **Mon, May 9, 2011 at 1:38 PM**
To: Maya Shved <maya@revolutionsearch.co>

Yeah do you know what people are looking for these days? I'm not sure if I should be spending time improving my low level C++, learning about different asset classes, memorizing exchange rules, or trying new modeling techniques. So right now my strat has been just to be a jack of all trades and master of none.

[Quoted text hidden]

Maya Shved <maya@revolutionsearch.co> **Tue, May 10, 2011 at 10:56 AM**
To: Ben Pu <ben.pu@cornell.edu>

Someone promised to send me an updated document last night J

People are always looking for the same crap:

1) Traders with successful track record (when market goes to poop everyone only wants high sharpe/low capital black box stat arb. when market improves – as it recently has, people become

more open to both fundamental and quantitative strategies that require more capital & risk)

2) Strong technical people (this includes kernel hackers for latency improvement (only at prop shops running stat arb for the most part), C++ & Python & Java & C# & Scripting & Gui & Unix specialists

3) connectivity folks, market data specialists, good math people for building or improving algo's and pretty much everything you would imagine a bank would need in order to support and improve existing systems

For you: I would advise at this time to not focus as much on low level C++ (though your C++ should ALWAYS be sharp), rather lets figure out what we want to market you as post citadel...our options are:

1) Trader

2) Technologist capable of building/improving proprietary trading platform

3) Quant with ability to improve existing algo's or build new ones (this could also be referred to as financial engineer, quantitative strategist or similar)

What are you trading at the present time? (product) what type of strategy? (high freq, stat arb, mid freq – more quantitative etc) Is this a strategy you picked up and polished off and made tradable or something you were handed or something you designed on your own?
What product are you most familiar with? With regards to how it trades, the exchanges it trades on and general behavior / what type of strategy are you most experienced with?

And finally: What is most appealing for you from the scenario's outlined above?

From: yihaobenpu@gmail.com [mailto:yihaobenpu@gmail.com] **On Behalf Of** Ben Pu
Sent: Monday, May 09, 2011 2:38 PM

[Quoted text hidden]

[Quoted text hidden]

Ben Pu <ben.pu@cornell.edu> **Tue, May 10, 2011 at 11:40 AM**
To: Maya Shved <maya@revolutionsearch.co>

Yeaaa my mom was visiting and you know with moms .... xD

Today!
[Quoted text hidden]

Maya Shved <maya@revolutionsearch.co> **Tue, May 10, 2011 at 11:43 AM**
To: Ben Pu <ben.pu@cornell.edu>

Alrightyyyyy

Think about the stuff below as well, let me know your thoughts

From: yihaobenpu@gmail.com [mailto:yihaobenpu@gmail.com] **On Behalf Of** Ben Pu
Sent: Tuesday, May 10, 2011 12:40 PM

[Quoted text hidden]

[Quoted text hidden]

Ben Pu <ben.pu@cornell.edu> **Tue, May 10, 2011 at 11:24 PM**
To: Maya Shved <maya@revolutionsearch.co>

Here you go.
[Quoted text hidden]

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ben.pu@cornell.edu.pdf
185K

Maya Shved <maya@revolutionsearch.co> **Wed, May 11, 2011 at 10:28 AM**
To: Ben Pu <ben.pu@cornell.edu>

What are the terms of your non-compete?

Im thinking: Eladian, Knight ETC, Infinium (NYC), Chopper (NYC), SAC

How do you feel about banks? Thinking a reintro into GS, DB, MS, Barclays, CS prop

Anything else you can think of or specifically want an introduction to?

From: yihaobenpu@gmail.com [mailto:yihaobenpu@gmail.com] **On Behalf Of** Ben Pu
Sent: Wednesday, May 11, 2011 12:25 AM

[Quoted text hidden]

[Quoted text hidden]

Ben Pu <ben.pu@cornell.edu> **Thu, May 12, 2011 at 9:02 AM**
To: Maya Shved <maya@revolutionsearch.co>

I believe some headhunter that I had chatted with a few weeks ago sent my resume to Eladian. I need to go somewhere I can spend more of my time doing alpha research and less of my time on infrastructure. Preferably it'd be a newish environment where the senior leadership / experienced folks take their time to give me alpha research projects which I can execute. I don't know if that'd happen at a bank. I heard a newish JP morgan group came up in the last year. How did that go?
[Quoted text hidden]

Exhibit C

Gmail by Google

Ben Pu <yihaobenpu@gmail.com>

Barcap (electronics and prop)

5 messages

Maya Shved <maya@revolutionstaffing.co> **Wed, May 11, 2011 at 10:46 AM**
To: yihaobenpu@gmail.com

Wanna give it a go?

Ben Pu <ben.pu@cornell.edu> **Sat, May 14, 2011 at 3:31 PM**
To: Maya Shved <maya@revolutionstaffing.co>

I'm trying to formulate some clear picture about my options over the next 5 years before making a decision on where to go. Not sure if career coaching is something you can fit into your busy schedule, but let me know if you or anyone you know is free for a phone call sometime.

Citadel is going reasonable well. My ballpark estimate is I want to stay here for around a year or less before moving. I like to plan ahead so that's why I'm looking now.

But yes, banks, funds, prop... everything is on the radar.

[Quoted text hidden]

Maya Shved <maya@revolutionstaffing.co> **Mon, May 16, 2011 at 8:55 AM**
To: Ben Pu <ben.pu@cornell.edu>

Hey, whenever you want. Want to chat today? I have drinks at 6pm est, otherwise im free

From: yihaobenpu@gmail.com [mailto:yihaobenpu@gmail.com] **On Behalf Of** Ben Pu
Sent: Saturday, May 14, 2011 4:31 PM
To: Maya Shved
Subject: Re: Barcap (electronics and prop)

[Quoted text hidden]

Maya Shved <maya@revolutionstaffing.co> **Mon, May 16, 2011 at 9:16 AM**
To: Ben Pu <ben.pu@cornell.edu>

Actually, the sooner we can chat the better – Bill Libby got back to me on you and looks like he wants to have a conversation

Out of the following 3, what would you prefer: Trade, product management or development

From: yihaobenpu@gmail.com [mailto:yihaobenpu@gmail.com] **On Behalf Of** Ben Pu
Sent: Saturday, May 14, 2011 4:31 PM
To: Maya Shved
Subject: Re: Barcap (electronics and prop)

I'm trying to formulate some clear picture about my options over the next 5 years before making a decision on

where to go. Not sure if career coaching is something you can fit into your busy schedule, but let me know if you or anyone you know is free for a phone call sometime.

[Quoted text hidden]

Ben Pu <ben.pu@cornell.edu> **Mon, May 16, 2011 at 1:29 PM**
To: Maya Shved <maya@revolutionstaffing.co>

This is the barcap director? Wow he's not even that much older than me.

Development is probably the lowest. Trading + Product management both sound good, depending on the definition of the latter. I think the team mandate and team quality are more important. Key things I'm looking for are growth opportunity, mentorship + team dynamics, overall business opportunity, and comp.

I'm already building a business here at Citadel, so really I want a place where I have a higher chance of better success, not just a horizontal move for location + little comp.

[Quoted text hidden]

Exhibit D

Gmail by Google

Ben Pu <yihaobenpu@gmail.com>

FW: Opportunity

Ben Pu <ben.pu@cornell.edu> **Thu, May 19, 2011 at 10:45 PM**
To: Daniel Morrison <Daniel.Morrison@ansonmccade.com>

Hi Daniel,

Sorry, it has been a very busy week.

I believe right now is not the best time for me to talk to Eladian partners, since I don't believe they are currently profitable trading. Also, things are going well here at Citadel, so I don't want to dive into chats that may evolve into interviews right now. Since the job requisition document more or less reflects what I am doing right now, I'm not sure what I would get out of joining a less proven team. Do you know what the compensation would look like?

Ben

[Quoted text hidden]

Exhibit 9

Gmail by Google

Ben Pu <yihaobenpu@gmail.com>

Thank you

Ben Pu <ben.pu@cornell.edu> **Wed, Jun 15, 2011 at 10:42 AM**
To: Matthew Hoyle <matthew.hoyle@matthewhoyle.com>

Hey Matt,

I'm not sure if I responded already, but I'm interested in hearing more about these places (or rather the specific offices, since I know a bit about the firms themselves), but things are going really well at Citadel so I don't think now is the best time for me to leave.

I'm getting back to Chicago later today. Perhaps we can chat for a couple minutes sometime.

Ben

[Quoted text hidden]

Exhibit F

Gmail by Google

Ben Pu <yihaobenpu@gmail.com>

Checking In

2 messages

Laura Peterson <lpeterson@oprecruiting.com> **Thu, Jun 9, 2011 at 2:32 PM**
To: ben.pu@comell.edu

Hi Ben,

Hope things are going well on your end. I just wanted to check in with you to see if you would be interested in hearing about our new positions. When we were in touch back in March, you mentioned that you were looking to stay in Chicago through 2011 and then might consider opportunities outside of the city after that. We have clients in Chicago and New York (primarily high frequency trading firms and quantiative hedge funds). It would be great to touch base to get an update and either discuss opportunities or follow up a few months down the road. Also, if you have any friends who would be interested in technical positions at trading firms or hedge funds please feel free to pass along my information.

Thanks and I look forward to hearing from you soon!

Laura Peterson
Recruiter
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Ben Pu <ben.pu@cornell.edu> **Wed, Jun 15, 2011 at 10:38 AM**
To: Laura Peterson <lpeterson@oprecruiting.com>

Hi Laura,

I have currently developed a profitable strategy at Citadel, and additionally I have a lot of growing responsibility in the group. So, I'm not sure if now is the best time to move. I do plan on eventually moving out of Chicago, though.

Hope things are going well on your end,

Ben
[Quoted text hidden]

Exhibit D

Q. Were you ever part of any such agreement?

A. No.

Q. Did you ever take steps to pursue such an agreement?

A. Absolutely not.

Q. Would it be fair to portray your dinner meeting in such a fashion given the facts?

A. Absolutely not.

Q. Okay. They have alleged in their complaint that at the -- after the dinner you informed Ben that you had spoken to Misha about a job for Pu and Uppal at Teza, is that fair?

A. Could you repeat the question?

Q. Did you speak to Misha about a job for Mr. Pu and Mr. Uppal at Teza?

A. No.

Q. You said earlier as you were describing your discussions with Misha that you talked about their profile?

A. That's correct.

Q. Is that a profile that applies to

many, many individuals in the high frequency trading business?

A. Probably the most common.

Q. Now let's get to what your business is. You are a recruiter?

A. Yes.

Q. You make money by having individuals change jobs, don't you, ma'am?

A. I do.

Q. And is it the case that through your relationship with Mr. Pu it was you more than he that ever raised the prospect of his changing jobs?

MR. SIEVE: I object to leading here because we are in an evidence deposition.

THE WITNESS: Yes.

BY MR. O'BRIEN:

Q. In your relationship with Mr. Pu who was it that most often raised the prospect of him changing a job?

A. It was me.

Q. Did he ever once after you met him pick up the phone to you, call you and say,

I am really unhappy here and I am thinking of moving?

A. No.

Q. It was the case that he would have liked to be in New York; is that correct?

MR. SIEVE: Same Objection. Leading.

THE WITNESS: Yes. That's correct.

BY MR. O'BRIEN:

Q. Is it the case that Ben expressed to you that he would have liked to be in New York?

A. Yes.

Q. Was it your sense if he could have found the same position at Citadel in their New York operations he may have been willing to transfer there?

A. Without a doubt.

Q. And when you had any discussions with respect to anybody potentially going to Teza who was it of Ben or Sonny who contacted you to follow up?

A. Sonny.

Q. Who sent you to his resume?

A. Sonny.

Q. Ben did not send you his resume?

MR. SIEVE: Objection. Leading.

BY MR. O'BRIEN:

Q. Did Ben send you his resume?

A. No.

Q. Mr. Sieve asked you a series of questions about discussions that you had with Ben and what he claimed might be proprietary information at Citadel; is that correct?

A. That's correct.

Q. In the recruiting business do both businesses and individuals need to change some exchange some basic level of information about their businesses and skills to know whether it is appropriate to hire and fire people?

MR. SIEVE: I object to foundation, no foundation and overbroad.

BY MR. O'BRIEN:

Q. You are a recruiter?

A. Yes.